



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/563,268

01/04/2006

Hideo Nagai

92478-9000

6407

52044

7590

04/30/2009

SNELL & WILMER L.L.P. (Panasonic)

600 ANTON BOULEVARD

SUITE 1400

COSTA MESA, CA 92626

EXAMINER

PHAM, LONG

ART UNIT

PAPER NUMBER

2814

MAIL DATE

DELIVERY MODE

04/30/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,268	Applicant(s) NAGAI, HIDEO	
	Examiner Long Pham	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-17 and 31-45 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11, 14-17, 31-33, and 36-45 is/are rejected.
- 7) ☒ Claim(s) 12, 13, 34 and 35 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

In light of the new ground of rejections, the indication of allowability of claims 5-7 and 9-13 have been withdrawn.

New grounds of rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-11, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US pat 6410348) in combination with Brukilacchio et al. (US pub 20040001239).

With respect to claim 1, Chen et al. teach a semiconductor light emitting device having a luminous layer, comprising (see figs. 1-7 and associated text):

a light transmission layer 216 disposed over a main surface of the luminous layer 214, and having depressions on a surface facing away from the luminous layer; and

a transmission membrane 218 disposed on the light transmission layer so as to follow contours of the depressions, wherein light from the luminous layer is irradiated so as to pass through the light transmission layer and the transmission membrane.

Chen et al. fail to teach the transmission membrane contains a luminous substance that is excitable by the light from the luminous layer.

Brukilacchio et al. a transmission membrane contains a luminous substance or phosphor that is excitable by the light from a luminous layer to achieve desirable white light for scanning. See paragraphs [0064-0066].

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to incorporate the teaching of Brukilacchio et al. into the device of Chen et al. to achieve the above benefit.

Art Unit: 2814

With respect to claim 2, Chen et al. further teach a surface of the membrane facing away from the light transmission layer is substantially flat.

With respect to claim 3, Chen et al. further teach a main component of the membrane is one of polyimide, epoxy, and silicone.

With respect to claim 4, Chen et al. fail to teach the membrane or transmission material is made of glass.

However, the use of glass as transmission material is well-known in semiconductor art.

With respect to claim 6, Chen et al. in combination with Brukilacchio et al. further teach the light from the luminous layer is inherently converted into white light by passing through the transmission membrane.

With respect to claim 7, Chen et al. in combination with Brukilacchio et al. further teach irradiating white light generated by light from the luminous substance being excited mixing with the light from the luminous layer.

With respect to claim 8, Chen et al. fail to teach the range for the interval or pitch between the depressions.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal value or range for the interval or pitch between the depressions through routine experimentation and optimization to obtain optimal or desired light extraction efficiency because there is no evidence indicating that the range is critical or produces any unexpected results and it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

With respect to claim 9, Chen et al. further teach wherein the light transmission layer is formed from at least a light transmission substrate 218, and the luminous layer is sandwiched between a plurality of layers 216, 218, 212, 200 and is disposed over the light transmission substrate.

With respect to claim 10, Chen et al. further teach the depressions are on a main surface of the light transmission substrate facing away from the luminous layer.

With respect to claim 11, Chen et al. further teach wherein the light transmission substrate is made of a material having a refractive index that is substantially equal to a refractive index of the luminous layer.

With respect to claim 14, Chen et al. further teach the is a light emitting diode device.

With respect to claims 15, 16, and 17, Chen et al. fail to teach using the light emitting structure in a vertical cavity surface emitting laser device, a resonant cavity light emitting diode, and surface mount device, respectively.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to use the above light emitting structure in a vertical cavity surface emitting laser device, a resonant cavity light emitting diode, and surface mount device to improve light extraction efficiency of those devices.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 31-33, 36, and 40-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (US pat 6410348).

With respect to claim 31, Chen et al. teach a semiconductor light emitting device having a luminous layer, comprising (see figs. 1-7 and associated text):

a light transmission layer 216 disposed over a main surface of the luminous layer 214, and having depressions on a surface facing away from the luminous layer; and

a transmission membrane 216 disposed on the light transmission layer so as to follow contours of the depressions,

wherein light from the luminous layer is irradiated so as to pass through the light transmission layer and the transmission membrane, wherein the light transmission layer is formed from at least a light transmission substrate, and the luminous layer is

Art Unit: 2814

sandwiched between a plurality of layers 216, 218, 212, 200 and is disposed over the light transmission substrate.

With respect to claim 32, Chen et al. further teach the depressions are on a main surface of the light transmission substrate facing away from the luminous layer.

With respect to claim 33, Chen et al. further teach wherein the light transmission substrate is made of a material having a refractive index that is substantially equal to a refractive index of the luminous layer.

With respect to claim 36, Chen et al. further teach the is a light emitting diode device.

With respect to claim 40, Chen et al. further teach wherein a surface of the transmission membrane facing away from the light transmission layer is substantially flat.

With respect to claim 41, Chen et al. further teach a main component of the transmission membrane is one of polyimide, epoxy, and silicone.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37-39, and 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US pat 6410348) as applied to claims 31-33, 36, and 40-41 above, and further in view of Brukilacchio et al. (US pub 20040001239).

With respect to claims 37-39, Chen et al. fail to teach using the light emitting structure in a vertical cavity surface emitting laser device, a resonant cavity light emitting diode, and surface mount device, respectively.

Art Unit: 2814

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to use the above light emitting structure in a vertical cavity surface emitting laser device, a resonant cavity light emitting diode, and surface mount device to improve light extraction efficiency of those devices.

With respect to claim 42, Chen et al. fail to teach the membrane or transmission material is made of glass.

However, the use of glass as transmission material is well-known in semiconductor art.

With respect to claim 43, Chen et al. fail to teach the transmission membrane contains a luminous substance that is excitable by the light from the luminous layer.

Brukilacchio et al. a transmission membrane contains a luminous substance or phosphor that is excitable by the light from a luminous layer to achieve desirable white light for scanning. See paragraphs [0064-0066].

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to incorporate the teaching of Brukilacchio et al. into the device of Chen et al. to achieve the above benefit.

Further with respect to claim 43, Chen et al. in combination with Brukilacchio et al. further teach the light from the luminous layer is inherently converted into white light by passing through the transmission membrane.

With respect to claim 44, Chen et al. in combination with Brukilacchio et al. further teach to emit light that then mixes with the light from the luminous layer to provide a combined white light emission layer from the semiconductor light emitting device.

With respect to claim 45, Chen et al. fail to teach the range for the interval or pitch between the depressions.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal value or range for the interval or pitch between the depressions through routine experimentation and optimization to obtain optimal or desired light extraction efficiency because there is no evidence indicating that the range is critical or produces any unexpected results and it

Art Unit: 2814

has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

Allowable Subject Matter

Claims 12-13 and 34-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on Mon-Frid, 10am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Long Pham
Primary Examiner
Art Unit 2814

/Long Pham/

Primary Examiner, Art Unit 2814

Application/Control Number: 10/563,268
Art Unit: 2814

Page 8